USAWC STRATEGY RESEARCH PROJECT

# Maximizing Command and Control

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## ABSTRACT

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By maximizing the span of Command and Control of our Army's Brigades, Battalions, Companies and Platoons, we can reduce manpower and equipment while increasing our combat capabilities. This SRP proposes ways to maximize the Army's Command and Control.

## TABLE OF CONTENTS

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## LIST OF ILLUSTRATIONS

## LIST OF TABLES

## MAXIMIZING COMMAND AND CONTROL

Today's Army leaders claim that we do not have enough Force Structure to support our current missions. So how can an undermanned Army consolidate or eliminate positions and still maintain its combat capabilities? Increasing Force Structure does not appear to be an option.

Because the Congressional Budget Office is now projecting a $336 billion budget surplus from 2002 to 2011, far less than the $5.6 trillion forecast just a year ago, the Bush administration and Congress will have to curtail spending plans. Further, it was never clear that the Defense Department would get a large part of the projected surplus. Now it is a virtual certainty that the military's transformation and modernization efforts will have to be largely self-funded, with any new capabilities paid for by cuts in existing programs or force structure.[1] With reduced revenues, it appears that Congress will not allow the Army to increase its force structure. The Army thus needs to better utilize the resources it currently has. Three ways to better utilize the Army's resources were considered: 1. Reducing Echelons 2. Alleviating all recruiting soldiers and their Organizations 3. Maximizing Command and Control. The first two ways are just briefly described below, prior to this SRP's close examination of the third topic—Maximizing Command and Control.

**Reducing Echelons** The Army should be able to reduce one or two echelons of command. We need a new perspective on the role of echelons – and less complaining about command workload. Since World War II, we have added another echelon, the Combatant Commander. Jacques and Clement discuss echelons of command in Executive Leadership. Both have been consultants to the Army and industry for more than thirty years. They have helped many of our largest corporations shed unneeded echelons. They maintain that the chief value added to leadership at each echelon is the ability to apply a perspective to problem-solving that is different in time span and composition from the echelon above and below it. They maintain that any layer which does not offer a unique perspective ought to be removed regardless of considerations of span of control. They insist that unnecessary layering creeps into organizations because of preconceptions about appropriate spans of control.[2]

Each echelon in our military has a defined role. But in view of the evolving technologies and the speed, lethality, range and precision of our future military, the value added to leadership at each echelon is being diminished. This, in turn, reduces the effectiveness and need for our echelons. I believe that in the future the largest operational unit we will deploy on the battlefield will be a brigade task force. No matter where that task force is operating, we will be able to fight

and effectively command and control that element from anywhere in the United States with one echelon of command.

**Eliminating all recruiting soldiers and their Organizations**. The Army can save thousands of personnel by eliminating its enlisted recruiting organizations. Consider the following structure of the U.S. Army Recruiting Accessions Commands:

1,722 Stations; 243 Co; 47 Bn; 5 Bdes

AC support: Military – 8226; Civilian – 1,119

AC support: AGR – 1,544; Civilian – 98

Private industry is generally more efficient at certain tasks than government organizations. If we privatize Recruiting, it would be handled just like real estate. You would see private recruiting companies in towns just like you would see real estate offices in a community. The Army would need to assign a dollar amount or commission ($1,000 to $3,000) for each recruit, according to MOS, that enlists. Part of the commission would be paid when the recruit passes the physical and entrance tests, and the remaining ration would be paid when the recruit graduates from Basic Training. Each civilian recruiter would be trained and licensed just like a real estate salesman. The Army would man the testing stations and oversee the licensing and training of the civilian recruiters – a minimal commitment in manpower, compared with the current expenditure.

**Maximizing Command and Control** After looking at all three topics, this was the one that gave the Army the most benefit. This SRP will argue that if we maximize the span of Command and Control of our current Army's brigades, battalions, companies and platoons, then we could reduce the number of Unit Headquarters and save thousands of soldiers. This additional manpower could be used to create additional units, increase current organizations or reduce force structure to save dollars. First, the SRP reviews the history of Command and Control, concluding that the Army is structured the same way today as it was during World War II. Why? The study then seeks to determine the maximum number of units one commander can effectively command.

An analysis of the current TOE of one Mechanized Infantry Division, 4thID, reveals the span of Command and Control for each command in this Division is three. Increasing that span of control to four, and then to five, units yields substantial manpower savings – at what cost or risk? It concludes that, indeed, our Army can do more with less manpower.

**HISTORY OF COMMAND AND CONTROL**

In early primitive military organizations, a commander's control was limited to small forces of men whose actions he could personally direct and whose movements were within range of his voice and hand signals. Over the years, the size, sophistication, and operational range of military units has greatly increased. These increases have required commanders to transmit orders and to exercise control by means of messengers, flag or smoke signals, trumpet or drum, and eventually, by means of subordinate commanders and rudimentary personal staffs.[3]

At the turn of the 19th Century, the requirements for effective command and control multiplied at a rate never before experienced. With the increase in the size of field armies (which began during the Napoleonic period), existing control mechanisms were stressed. In addition, increased firepower capabilities forced military units into widely dispersed formations which, in turn, decentralized and dislocated command. Also, steam propulsion greatly enhanced mobility on land and inland waterways, vastly extending the geographical scope of military operations. The telegraph and more sophisticated methods of military signaling then kept the commander in contact with his widespread forces.[4]

By the 20th Century, the President or Senior Commander no longer commanded or controlled his forces in person. Rather, he exercised general direction, leaving considerable freedom of action to on-the-spot subordinate commanders or staff representatives. This was desirable, to a large extent, since increasing numbers, size, and dispersal of subordinate units dictated that their leaders exercise a great deal of initiative. But the commander in chief still depended on firmly established doctrine to prevent substantial deviations from the overall objectives set forth in his directives. Even more significantly, as the scope and destructiveness of war increased, the commander in chief had to be increasingly concerned with the possibility of faulty execution on the part of subordinates[5].

Similarly, as the possible consequences of acts of war have increased in scope and gravity, there has been growing civilian political concern about the problems and dangers inherent in the employment of military force for political ends. This has led to closer political supervision over, and to some direct involvement in, military command issues in war, as well as in peacetime crises. By the same token, communications procedures and command relationships became more complicated. Although the introduction of the military staff system assisted the Commander, the staff decentralized and diluted his individual influence.[6]

As we proceed into the 21st Century, personal leadership by a commander in chief, the rule in earlier generations, will no longer be feasible; operational control in general, and battle control in particular, have passed increasingly to subordinates[7]. In future wars, commanders

will communicate beyond line of sight and provide near-real-time “pictures” of the battlefield to other commanders and staffs, without physically being in potentially dangerous locations. This capability is important, for it enables commanders to deploy and maneuver forces without being constrained by communications. In an environment overshadowed by weapons of mass destruction, the dispersion of forces is essential to force protection and survivability. Additionally, the increased accuracy and lethality of modern weapons allows the commander to mass effects, not weapon systems. The future commander will have a digital reflection of his entire battle space. This depiction will represent reality, thereby enhancing his ability to control his units.[8]

The time has come to break out of our 20th Century mentality. Commanders no longer have to be near their subordinates to effectively command, because new technologies have substantially increased the distance, scope and complexity of the information that can be shared through the integration of computer communications. Such innovations as tele- and computer conferencing, groupware, Internet orders or chat, and web sites have allowed participants to share “horizontal” and rich exchanges without requiring them to be located in close proximity[9].

**COMMAND AND CONTROL**

The Department of Defense Dictionary of Military and Associated terms (JCS Pub 0-1) defines “Command and Control” as

> The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and Control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating and controlling forces and operations in the accomplishment of the mission[10].

This definition is no longer adequate. The first part -- “The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission” -- is really the classic definition of the command function, while the second part of that definition -- “Command and Control functions are performed through an arrangement of personnel, equipment, communications, facilities and procedures employed by a commander in planning, directing, coordinating and controlling forces and operations in the accomplishment of the mission”-- is fairly close to a good working definition of a “Command and Control and Communications” (C3) system. But the combined portions fail to accurately designate the Command and Control process itself[11].

The Marines have the most plain-spoken definition of what Command and Control means: Command and Control is the means by which a commander recognizes what needs to be done and sees to it that appropriate actions are taken.[12] This definition also consists of two parts: 1. the commander's recognition of a necessary task and 2. the commander's actions to perform the task. Command and Control, then, refers to the process that enables a commander to succeed: He sees what task must be performed to accomplish his mission, then he uses available resources to do the job expeditiously. For the purpose of this SRP, the Marine's definition will be analyzed.

What has changed in the past century to affect a commander's ability to command and control? Can he now command up to five or more units? Current research does not identify limiting factors for Command and Control. Research does identify limiting factors for span of control, but not for command and control.

War is the ultimate test of military doctrine and operations. During the last half century , particularly World War II, commanders routinely commanded up to five units. But today's Army usually limits command to three units: three platoons per company, three companies per battalion, three battalions per brigade and three brigades per division. In today's environment, there is no rationale for limiting a commander's span to only three units, especially in view of the Marine Corps' precise view of the process. Indeed, technological advances in the last century allow for an increased span of control. Modern computing power enables commanders to supplement the command decision process by synthesizing information for display and expediting rapid exploration of decision alternatives[13].

Information technology has impacted three major areas that would increase a commander's recognition of what needs to be done and give him the ability to determine an appropriate course of action.

First, new technologies have greatly reduced transmission time, enabling commanders to communicate and coordinate their tasks very quickly. This phenomenon is not new. In the early 20th century, the introduction of the telephone made it possible for large corporations to decentralize their operations through local branches[14]. Likewise, in today's Army, commanders no longer need to be geographically located with their units.

Second, new technologies have significantly reduced the cost of communication, making information-intensive organizational designs such as networks practical and viable. Organizations have always sought to reduce coordination and communications costs by centralizing and collocating those activities that are inherently more coordination-intensive. With reduced coordination costs, it is becoming increasingly possible to further disintegrate

organizations through decentralization and autonomy[15]. Currently, unit commanders in peace or war no longer have to be in the operational area to effectively command and control them.

Third, new technologies have substantially increased the scope and complexity of the information that can be shared, through the computerized integration of communication. Our technology will eventually give a battlefield commander perfect situation awareness. He will know exactly where he is located, where all of his forces are located and where the enemy is located. With this kind of information, much of the guesswork is eliminated from the planning and execution processes.[16] Information-age technologies assuredly offer real military advantage; this technology allows military units and headquarters to be geographically dispersed[17].

Units under the same command no longer have to be located on the same base or battlefield, whether in peace time or war. Information technologies enable commanders to command their forces from anywhere in the world. Advances in technology have provided capabilities never before imagined. That's not to say there is no risk in depending on information technology. As the Command and Control system becomes increasing complex, it likewise becomes increasingly vulnerable to disruption, monitoring and penetration by the enemy, along with its inherent propensity of shut down or malfunctions[18]. Even without this technology, the increasing lethality and range of weapons has compelled military forces to disperse in order to survive[19]. From a Command and Control standpoint, in today's environment there is no reason why we can't increase the number of units under one commander's command to more than three units.

**SPAN OF CONTROL**

What is the proper span of control for organizations? How large of a military organization can be effectively commanded at the operational level? This question has simply never been satisfactorily answered, nor even satisfactorily addressed, despite the fact that it is a major issue for organizational development and for the effectiveness of leadership which depends upon this organizational development[20].

Military organizations are run by a vertical chain of command, which establishes the command and support relationships within the force. The chain of command identifies authority and assigns responsibility in an unbroken succession directly from one commander to another. The commander at each level responds to orders and directions received from a higher commander and, in turn, issues orders and gives directions to subordinates. In this way the organization fixes authority and responsibility at each level, while distributing them broadly

throughout the force. Each commander has designated authority and responsibility in a given organization. Importantly, military organizations also establish unity of command, which means that any given mission falls within the authority and responsibility of a single commander and that a commander receives orders from only one superior for any given mission[21]. This organizational structure effectively establishes our command and support relationships. It does not, however, specify the organizational span. It appears that we organize into a hierarchy for pay and status, rather than for getting our work done.

Current wisdom holds that effective managers should be supported by somewhere between three and six subordinates. But this limitation has no basis in theory or fact. It was asserted on the basis of no evidence by a management expert named Graicunas in the 1920s. It has been paid lip service ever since, probably because we lethargically observe easy-to-apply rules of thumb which need no thought, according to Jacque and Clement.[22]

It is time to dispense with conventional wisdom and to consider increasing the Army's span of command. Combat organizations have to be mobile, so we need the ability to be able to pick up units of various sizes, along with their commanders, and move them about rapidly, continuously and over long distances and difficult terrain. We must be able to reconstitute them rapidly. Even so, we can increase the span of control of our units; we can reduce force structure and equipment while maintaining the same combat power.[23]

Combat is the ultimate test for units and commanders. History has shown that commanders have successfully commanded up to five units in combat. It is not preposterous to consider increasing the span of control to eight units, given today's current technological advancements. But without any hard evidence or experiences to support such dramatic expansion, our current military leadership and culture would never accept it. Accordingly, this SRP will consider the feasibility of an expansion to five units of command.

**MAXIMIZING THE SPAN OF CONTROL FOR ONE DIVISION**

Consider the following scenario of maximizing the units in the 4th Infantry Division (Mechanized). Let's increase the span of control for all units in the division to four -- four Squads per Platoon, four Platoons per Company, four Companys per Battalion, and four Battalions per Brigade. Then increase it to five units -- five Squad's per Platoon, five Platoon's per Company, five Company's per Battalion, and five Battalion's per Brigade. Note the demonstrated savings in personnel for each increase. Table 1 lists the 4ID Division units surveyed.

| Major Commands | Subordinate Commands |
|---|---|
| **1st Brigade, 4th Infantry** | |
| | 1-22 Infantry Battalion |
| | 1-66 Armor Battalion |
| | 3-66 Armor Battalion |
| | 299th Engineer Battalion |
| **2nd Brigade, 4th Infantry** | |
| | 2-8 Infantry Battalion |
| | 1-67 Armor Battalion |
| | 3-67 Armor Battalion |
| | 588th Engineer Battalion |
| **3rd Brigade, 4th Infantry (Ft. Carson)** | |
| | 1-68 Armor Battalion (Ft. Carson) |
| | 1-8 Infantry Battalion (Ft. Carson) |
| | 1-12 Infantry Battalion (Ft. Carson) |
| | 4th Engineer Battalion (Ft. Carson) |
| **4th Brigade, 4th Infantry** | |
| | 1-4 Aviation Battalion (Attack) |
| | 2-4 Aviation Battalion (General Support) |
| | 1-10th Cavalry Squadron |
| **Division Artillery (DIVARTY)** | |
| | 4-42 Field Artillery Battalion (Paladin) |
| | 3-16 Field Artillery Battalion (Paladin) |
| | 3-29 Field Artillery Battalion (Paladin) (Ft. Carson) |
| | 2-20 Field Artillery Battalion (MLRS) |
| **Division Support Command (DISCOM)** | |
| | 4th Forward Support Battalion |
| | 204th Forward Support Battalion |
| | 64th Forward Support Battalion (Ft. Carson) |
| | 404th Aviation Support Battalion |
| | 704th Division Support Battalion |
| **104th Military Intelligence Battalion** | |
| **1-44th Air Defense Artillery Battalion** | |
| **124th Signal Battalion** | |
| **Headquarters and Headquarters Company** | |
| **4th Military Police Company** | |
| **4th Infantry Division Band** | |
| **610th Engineer Detachment** | |

TABLE 1

To assist my research, the United States Army Force Management School at Fort Leavenworth granted permission to enter their restricted data base. The personnel strengths of each 4 ID unit are itemized in Table 2.

| 4th IN DIV | HHC | ACO | BCO | CCO | DCO |
|---|---|---|---|---|---|
| DIV HHC | 374 | | | | |
| 1st BDE | 97 | | | | |
| 1-22 IN BN | 335 | 108 | 108 | 108 | 108 |
| 1-66 AR BN | 345 | 63 | 63 | 63 | 63 |
| 3-66 AR BN | 345 | 63 | 63 | 63 | 63 |
| 299TH EN BN | 137 | 94 | 94 | 94 | |
| 2ND BDE | 91 | | | | |
| 2-8 INF BN | 335 | 108 | 108 | 108 | 108 |
| 1-67 AR BN | 345 | 63 | 63 | 63 | 63 |
| 3-67 AR BN | 345 | 63 | 63 | 63 | 63 |
| 588TH EN BN | 137 | 94 | 94 | 94 | |
| 3RD BDE | 90 | | | | |
| 1-68 AR BN | 345 | 63 | 63 | 63 | 63 |
| 1-8 IN BN | 335 | 108 | 108 | 108 | 108 |
| 1-12 IN BN | 335 | 108 | 108 | 108 | 108 |
| 4TH EN BN | 13 | 94 | 94 | 94 | |
| 4TH BDE | 11 | | | | |
| 1-4 AV BN | 137 | 33 | 33 | 33 | 92 |
| 2-4 AV BN | 123 | 70 | 35 | 35 | |
| 1-10 CAV SQ | 225 | 73 | 54 | 381 | |
| DIV ART | 172/75 | | | | |
| 4-42 FLD ART | 226 | 93 | 93 | 93 | 119 |
| 3-16 FLD ART | 226 | 93 | 93 | 97 | 119 |
| 3-29 FLD ART | 119 | 93 | 93 | 93 | 119 |
| 2-20 FLD ART | 69 | 115 | 115 | 115 | |
| DIV SUP CMD | 242 | | | | |
| 4TH SUP BN | 51 | 62 | 86 | 60 | 170 |
| 204TH SUP BN | 51 | 62 | 86 | 60 | 170 |
| 64TH SUP BN | 51 | 62 | 86 | 60 | 170 |
| 404TH AV SUP BN | 129 | 176 | 213 | 60 | 164 |
| 704TH DIV SUP BN | 76 | 506 | 146 | 133 | 127 |
| 104TH MI BN | 102 | 37 | 160 | 160 | 160 |
| 1-44TH AIR DEF BN | 154 | 110 | 110 | 110 | 133 |
| 124TH SIG BN | 129 | 139 | 139 | 139 | 79 |
| HQ @ HQ Co | 17 | | | | |
| 4th MP CO | 160 | | | | |
| 4ID Band | 41 | | | | |
| TOTAL | 6744 | 2753 | 2571 | 2720 | 2369 |
| | | | | | |

TABLE 2

Increasing the span of command is, of course, tricky business. It is certainly not a matter of assigning an “extra” unit to a given command. So at each organizational level, we

must decide judiciously how to redesign the headquarters unit to assure that it can carry out its larger responsibilities. Expansion of the span thus yields a net saving of personnel, but this reduction of personnel must be carefully determined in view of the headquarters units' increased span of command. For example, a full strength 4ID Infantry battalion headquarters is currently assigned 335 soldiers. See figure 1.

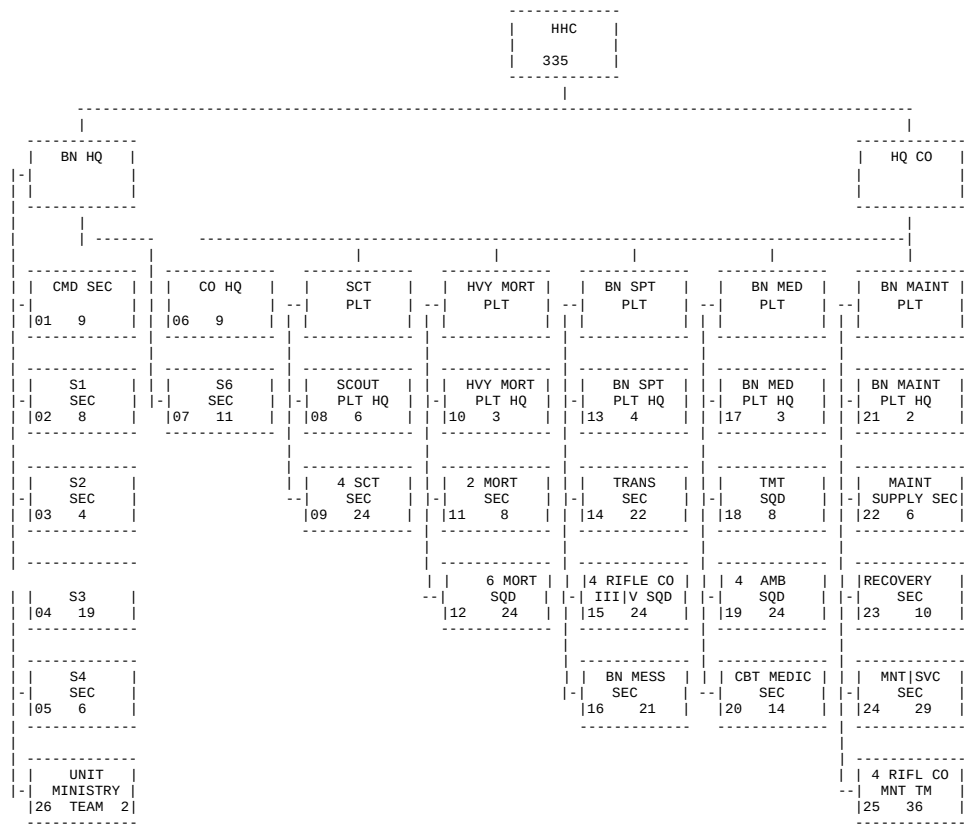


FIGURE 1. HHC INF BN ORGANIZATIONAL BLOCK DIAGRAM WITH MANPOWER.

What if this headquarters were assigned command of two battalions? Certainly such consolidation would not automatically eliminate the need for an entire 335 soldier headquarters unit. My analysis (see Figure 2) indicates that such a consolidation would yield a net saving of 86 soldiers.

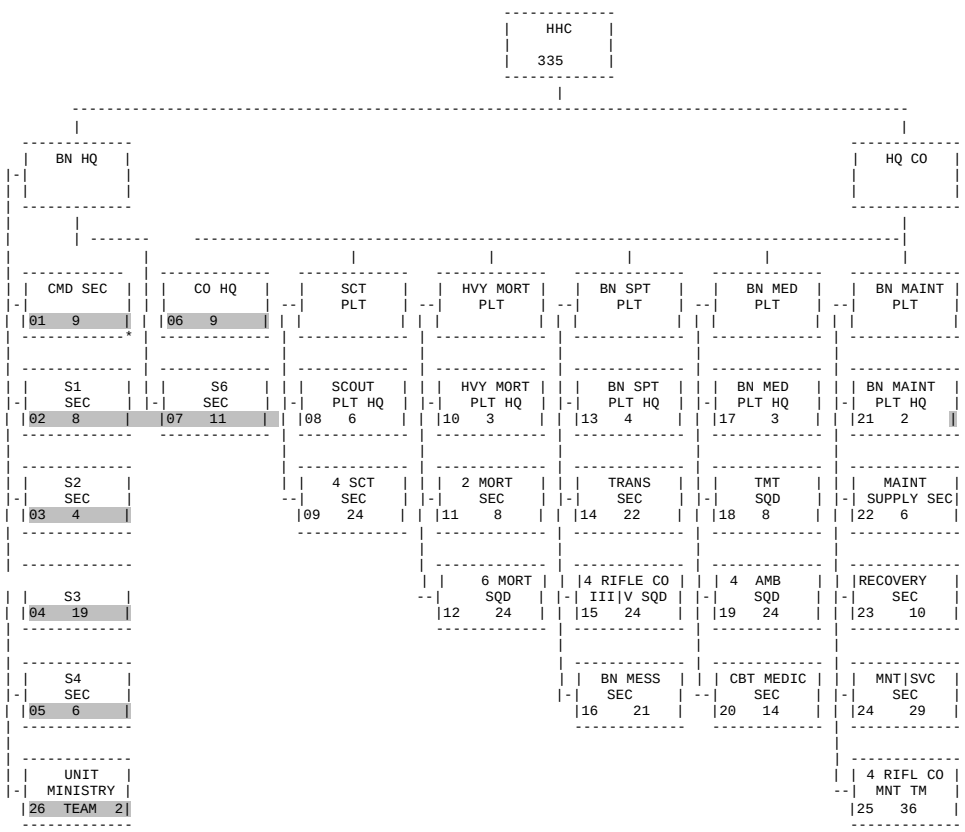


FIGURE 2. HHC INF BN HIGHLIGHTED ORGANIZATIONAL BLOCK DIAGRAM WITH MANPOWER

The remaining 249 personnel in that unit supported the combat units that were being combined with other units. A similar analysis was conducted for every 4 ID unit. Table 3 breaks out the Staff and Headquarters personnel from each unit.

| 4th IN DIV | HHC | ACO | BCO | CCO | DCO |
|---|---|---|---|---|---|
| DIV HHC | 374 | | | | |
| 1st BDE | 97/97 | | | | |
| 1-22 IN BN | 335/86 | 108/12 | 108/12 | 108/12 | 108/12 |
| 1-66 AR BN | 345/92 | 63/15 | 63/15 | 63/15 | 63/15 |
| 3-66 AR BN | 345/92 | 63/15 | 63/15 | 63/15 | 63/15 |
| 299TH EN BN | 137/60 | 94/12 | 94/12 | 94/12 | |
| 2ND BDE | 91 | | | | |
| 2-8 INF BN | 335/86 | 108/12 | 108/12 | 108/12 | 108/12 |
| 1-67 AR BN | 345/92 | 63/15 | 63/15 | 63/15 | 63/15 |
| 3-67 AR BN | 345/92 | 63/15 | 63/15 | 63/15 | 63/15 |

| | | | | | |
|---|---|---|---|---|---|
| 588TH EN BN | 137/60 | 94/12 | 94/12 | 94/12 | |
| 3RD BDE | 90 | | | | |
| 1-68 AR BN | 345/92 | 63/15 | 63/15 | 63/15 | 63/15 |
| 1-8 IN BN | 335/86 | 108/12 | 108/12 | 108/12 | 108/12 |
| 1-12 IN BN | 335/86 | 108/12 | 108/12 | 108/12 | 108/12 |
| 4TH EN BN | 137/60 | 94/12 | 94/12 | 94/12 | |
| 4TH BDE | 112/66 | | | | |
| 1-4 AV BN | 137/62 | 33/5 | 33/5 | 33/5 | 92/26 |
| 2-4 AV BN | 123/58 | 70/13 | 35/5 | 35/5 | |
| 1-10 CAV SQ | 225/80 | 73/8 | 54/10 | 381/45 | |
| DIV ART | 172/75 | | | | |
| 4-42 FLD ART | 226/86 | 93/7 | 93/7 | 93/7 | 119/37 |
| 3-16 FLD ART | 226/86 | 93/7 | 93/7 | 97/7 | 119/37 |
| 3-29 FLD ART | 119/21 | 93/7 | 93/7 | 93/7 | 119/21 |
| 2-20 FLD ART | 69/7 | 115/3 | 115/3 | 115/3 | |
| DIV SUP CMD | 242/79 | | | | |
| 4TH SUP BN | 51/51 | 62/27 | 86/25 | 60/18 | 170/33 |
| 204TH SUP BN | 51/51 | 62/27 | 86/25 | 60/18 | 170/33 |
| 64TH SUP BN | 51/51 | 62/27 | 86/25 | 60/18 | 170/33 |
| 404TH AV SUP BN | 129/60 | 176/22 | 213/15 | 62/10 | 164/37 |
| 704TH DIV SUP BN | 76/76 | 506/50 | 146/15 | 133/24 | 127/27 |
| 104TH MI BN | 102/26 | 37/7 | 160/43 | 160/43 | 160/43 |
| 1-44TH AIR DEF BN | 154/77 | 110/37 | 110/37 | 110/37 | 133/19 |
| 124TH SIG BN | 129/22 | 139/26 | 139/26 | 139/26 | 79/32 |
| HQ @ HQ Co | 17 | | | | |
| 4th MP CO | 160 | | | | |
| 4ID Band | 41 | | | | |
| TOTAL | 6744/2888 | 2753/435 | 2571/414 | 2720/432 | 2369/501 |
| | | | | | |

TABLE 3

This study identifies only the savings in command and staff personnel. But personnel savings yield further savings – in reduced facilities, vehicles and equipment that support them. This study does not attempt to assess these ripple effects of reducing personnel.

MAXIMIZING THE SPAN OF CONTROL TO FOUR UNITS

So far we have considered the savings from increasing the span of control of maneuver units. Now let's consider how these savings lead to further reductions in combat support and combat service support units. Again, the span of control would be expanded from three to four. So when the number of Infantry companies increased per Battalion, the number of Engineer Platoons also increased in that Engineer Company.

The 4th ID contains a total of 96 Infantry Rifle Squads and 180 Tank Squads. When I expanded the span of control to 4, I came up with the following number of Battalions:

| Infantry | Armor |
|---|---|
| 96 Inf Sqd's / 4 = 24 Inf Plt's | 180 Tank Sqd's / 4 = 45 Tank Plt's |
| 24 Inf Plt's / 4 = 6 Inf Co's | 45 Tank Plt's / 4 = 11.1 Tank Co's |
| 6 Inf Co's / 4 = 1.5 Inf Bn | 11.1 Tank Co's / 4 = 2.77 Tank Bn's |

Increasing the span to 4 yields a savings of 1504 personnel (See table 4). The personnel savings are cited in the Span 4 columns to the right of the unit numbers. As we have noted, this number does not include the ripple effect of the reduction of personnel that supports these 1504 soldiers.

| 4th IN DIV | HHC | Span4 | ACO | Span4 | BCO | Span4 | CCO | Span4 | DCO | Span4 |
|---|---|---|---|---|---|---|---|---|---|---|
| DIV HHC | 374 | | | | | | | | | |
| 1st BDE | 97/97 | | | | | | | | | |
| 1-22 IN BN | 335/86 | | 108/12 | | 108/12 | | 108/12 | | 108/12 | |
| 1-66 AR BN | 345/92 | | 63/15 | | 63/15 | | 63/15 | | 63/15 | |
| 3-66 AR BN | 345/92 | | 63/15 | | 63/15 | | 63/15 | | 63/15 | |
| 299TH EN BN | 137/60 | | 94/12 | | 94/12 | | 94/12 | | | |
| 2ND BDE | 91 | 91 | | | | | | | | |
| 2-8 INF BN | 335/86 | | 108/12 | | 108/12 | 12 | 108/12 | 12 | 108/12 | |
| 1-67 AR BN | 345/92 | | 63/15 | | 63/15 | | 63/15 | 15 | 63/15 | |
| 3-67 AR BN | 345/92 | 92 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 |
| 588TH EN BN | 137/60 | 60 | 94/12 | | 94/12 | | 94/12 | 12 | | |
| 3RD BDE | 90 | 90 | | | | | | | | |
| 1-68 AR BN | 345/92 | 92 | 63/15 | 16 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 |
| 1-8 IN BN | 335/86 | 86 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 |
| 1-12 IN BN | 335/86 | 86 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 |
| 4TH EN BN | 137/60 | 60 | 94/12 | 12 | 94/12 | 12 | 94/12 | 12 | | |
| 4TH BDE | 112/66 | | | | | | | | | |
| 1-4 AV BN | 137/62 | | 33/5 | | 33/5 | | 33/5 | | 92/26 | |
| 2-4 AV BN | 123/58 | | 70/13 | | 35/5 | | 35/5 | 10 | | |
| 1-10 CAV SQ | 225/80 | | 73/8 | | 54/10 | 5 | 381/45 | 15 | | |
| DIV ART | 172/75 | | | | | | | | | |
| 4-42 FLD ART | 226/86 | | 93/7 | | 93/7 | | 93/7 | | 119/37 | |
| 3-16 FLD ART | 226/86 | 86 | 93/7 | 7 | 93/7 | 7 | 97/7 | 7 | 119/37 | |
| 3-29 FLD ART | 119/21 | 21 | 93/7 | 7 | 93/7 | 7 | 93/7 | 7 | 119/21 | |
| 2-20 FLD ART | 69/7 | | 115/3 | 3 | 115/3 | 3 | 115/3 | | | |
| DIV SUP CMD | 242/79 | | | | | | | | | |
| 4TH SUP BN | 51/51 | | 62/27 | | 86/25 | | 60/18 | | 170/33 | |
| 204TH SUP BN | 51/51 | 51 | 62/27 | 27 | 86/25 | 25 | 60/18 | 13 | 170/33 | 33 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 64TH SUP BN | 51/51 | | 62/27 | | 86/25 | | 60/18 | | 170/33 | |
| 404TH SUP BN | 129/60 | | 176/22 | | 213/15 | | 62/10 | | 164/37 | |
| 704TH SUP BN | 76/76 | | 506/50 | | 146/15 | | 133/24 | | 127/27 | |
| 104TH MI BN | 102/26 | | 37/7 | | 160/43 | 43 | 160/43 | 43 | 160/43 | |
| 1-44TH AIR BN | 154/77 | | 110/37 | | 110/37 | 37 | 110/37 | 37 | 133/19 | |
| 124TH SIG BN | 129/22 | | 139/26 | | 139/26 | 23 | 139/26 | 26 | 79/32 | |
| HQ @ HQ Co | 17 | | | | | | | | | |
| 4th MP CO | 160 | | | | | | | | | |
| 4ID Band | 41 | | | | | | | | | |
| TOTAL | 6744/2888 | | 2753/435 | | 2571/414 | | 2720/432 | | 2369/501 | |
| Span 4Savings | | 815 | | 111 | | 228 | | 263 | | 87 |
| | | | | | | | | | | |
| Total Span 4 Saving | | 1504 | Personnel | | | | | | | |

TABLE 4

MAXIMIZING THE SPAN OF CONTROL TO FIVE UNITS

Maximizing the span of control to five yields the following number of battalions:

| Infantry | Armor |
|---|---|
| 96 Inf Sqd's / 5 = 19.1 Inf Plt's | 180 Tank Sqd's / 5 = 36 Tank Plt's |
| 24 Inf Plt's / 5 = 4.8 Inf Co's | 45 Tank Plt's / 5 = 7.2 Tank Co's |
| 6 Inf Co's / 5 = 1 Inf Bn | 11.1 Tank Co's / 5 = 1.44 Tank Bn's |

Increasing the span to five yields a savings of 1865 personnel ( See Table 5). Personnel savings are cited in the span 5 column to the right of the unit numbers.

| 4th IN DIV | HHC | Span5 | ACO | Span5 | BCO | Span5 | Span5 | Span5 | DCO | Span5 |
|---|---|---|---|---|---|---|---|---|---|---|
| DIV HHC | 374 | | | | | | | | | |
| 1st BDE | 97/97 | | | | | | | | | |
| 1-22 IN BN | 335/86 | | 108/12 | | 108/12 | | 108/12 | | 108/12 | |
| 1-66 AR BN | 345/92 | | 63/15 | | 63/15 | | 63/15 | | 63/15 | |
| 3-66 AR BN | 345/92 | | 63/15 | | 63/15 | | 63/15 | | 63/15 | |
| 299TH EN BN | 137/60 | | 94/12 | | 94/12 | | 94/12 | | | |
| 2ND BDE | 91 | 91 | | | | | | | | |
| 2-8 INF BN | 335/86 | | 108/12 | | 108/12 | 12 | 108/12 | 12 | 108/12 | |
| 1-67 AR BN | 345/92 | 92 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 |
| 3-67 AR BN | 345/92 | 92 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 |
| 588TH EN BN | 137/60 | 60 | 94/12 | 12 | 94/12 | 12 | 94/12 | 12 | | |
| 3RD BDE | 90 | 90 | | | | | | | | |
| 1-68 AR BN | 345/92 | 92 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 | 63/15 | 15 |
| 1-8 IN BN | 335/86 | 86 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 |
| 1-12 IN BN | 335/86 | 86 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 | 108/12 | 12 |
| 4TH EN BN | 137/60 | 60 | 94/12 | 12 | 94/12 | 12 | 94/12 | 12 | | |
| 4TH BDE | 112/66 | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1-4 AV BN | 137/62 | | 33/5 | | 33/5 | | 33/5 | | 92/26 | |
| 2-4 AV BN | 123/58 | | 70/13 | | 35/5 | | 35/5 | 10 | | |
| 1-10 CAV SQ | 225/80 | | 73/8 | | 54/10 | 5 | 381/45 | 30 | | |
| DIV ART | 172/75 | | | | | | | | | |
| 4-42 FLD ART | 226/86 | | 93/7 | | 93/7 | | 93/7 | | 119/37 | |
| 3-16 FLD ART | 226/86 | 86 | 93/7 | 7 | 93/7 | 7 | 97/7 | 7 | 119/37 | 37 |
| 3-29 FLD ART | 119/21 | 21 | 93/7 | 7 | 93/7 | 7 | 93/7 | 7 | 119/21 | |
| 2-20 FLD ART | 69/7 | | 115/3 | 3 | 115/3 | 3 | 115/3 | | | |
| DIV SUP CMD | 242/79 | | | | | | | | | |
| 4TH SUP BN | 51/51 | | 62/27 | | 86/25 | | 60/18 | | 170/33 | |
| 204TH SUP BN | 51/51 | 51 | 62/27 | 27 | 86/25 | 25 | 60/18 | 13 | 170/33 | 33 |
| 64TH SUP BN | 51/51 | 51 | 62/27 | 27 | 86/25 | 25 | 60/18 | 13 | 170/33 | 33 |
| 404TH SUP BN | 129/60 | | 176/22 | | 213/15 | | 62/10 | | 164/37 | |
| 704TH SUP BN | 76/76 | | 506/50 | | 146/15 | | 133/24 | | 127/27 | |
| 104TH MI BN | 102/26 | | 37/7 | | 160/43 | 43 | 160/43 | 43 | 160/43 | |
| 1-44TH AIR BN | 154/77 | | 110/37 | | 110/37 | 37 | 110/37 | 37 | 133/19 | |
| 124TH SIG BN | 129/22 | | 139/26 | | 139/26 | 23 | 139/26 | 26 | 79/32 | |
| HQ @ HQ Co | 17 | | | | | | | | | |
| 4th MP CO | 160 | | | | | | | | | |
| 4ID Band | 41 | | | | | | | | | |
| TOTAL | 6744/2888 | | 2753/435 | | 2571/414 | | 2720/432 | | 2369/501 | |
| Span 5 Savings | | 958 | | 164 | | 280 | | 291 | | 172 |
| | | | | | | | | | | |
| Total Span 5 Saving | | 1865 | | | | | | | | |

TABLE 5

Not counting the ripple effect of personnel savings, this number would increase dramatically because most of the support unit battalions would be reduced to companies. Battalions were retained in the consolidation even if they consisted of only a single company in order not to overestimate savings.

**CONCLUSION**

Good businesses try to reduce their overhead. At the same time, they try to increase the manufacturing or production capabilities. As technology has advanced, it has been easier for businesses to do that. The production capability of our military is our combat power (Tanks, Bradleys, Artillery, Attack Aviation and our Infantry Soldiers). But there has never been any real incentive for the Army to be efficient. The Army has the same organizational structure it had in World War II. You would think that since technology has increased tenfold, the military could be more efficient. And we can. History has shown us that the maximum span of control is three to six units for any headquarters. The average military unit in the Army today has three or fewer

units under its command. Then that means we have over 50 percent too many headquarters organizations in our military than we need.

This study focuses on the maneuver piece of one Army Division, 4thID. Although my findings regarding 4th ID savings from expanded spans of control may be challenged, my research has shown that the Army will realize substantial savings in personnel by maximizing its span of control. We can, as well, maintain our same combat capability while we reduce our force structure.

Expansion of spans of command will pose risks. It will be harder to command and control larger units. Yet today's technologies have given us the ability to increase our span of control. But the risks associated with cutting combat power far outweigh the risks associated with increased unit size. For example, there is discussion about cutting one to two divisions from our force structure, a savings of approximately 30 thousand soldiers. By maximizing the span of control of all our Divisions, we could cut 30 thousand soldiers and keep10 Divisions worth of combat capability. It's not hard to see which option best serves the nation's security!

There are billions of dollars in savings that can be realized when we maximize Command and Control. So what can this additional money be used for? It can help maintain the momentum the Army has recently achieved in protecting critical gains in readiness, quality of life and the transformation of the Army into a more mobile and sustainable force. These additional savings can counteract the ongoing trends of the Department of Defense in downsizing (in both material and personnel) and budget cuts that are leading the Army and the other Services to revise their vision for the future forces.[24] This money can also help the Army maintain its investments in the fundamental research that is the breeding ground for technological discoveries and innovations. The Army depends on this technology as it evolves toward smaller, lighter, more lethal forces that must accomplish an ever-increasing variety of post-Cold War missions.[25] . The Army could also could use these personnel savings to fill out personnel shortages to help support our increased mission load.

By reducing unnecessary Headquarter Organizations, we can transform our Army from its current "cold war" organization and equipment into a force that better utilizes its full spectrum of capabilities to a more strategically deployable force.

WORD COUNT =6,528

## ENDNOTES

[1] Fastrack: Shrinking surplus bad news for DoD. Army Times, 7 October 2002, p6

[2] Elliott Jaques and Stephen D. Clement. Executive Leadership (Cason Hall &Co. Publishers., 1991). 68

[3] Historical Evaluation and Research Organization, A Preliminary, Interpretive Survey of the History of Command and Control. (Washington D. C.: 3 Historical Evaluation and Research Organization, 1993), 1

[4] Ibid.,1

[5] Ibid.,2

[6] Ibid.,3

[7] Ibid.,3

[8]Montague Winfield. The Impact of Information Age Technology on Leadership, and Battlefield Command, Control, and Communication (U.S Army War College). 13

[9] John Arquilla and David Ronfeldt. Networks and Netwars (RAND., 2001). 36

[10] Frank M. Snyder. Command and Control: Readings and Commentary (President and Fellows of Harvard College., 1989). 12

[11] Ibid.,17

[12] Ibid., 37

[13] Ibid.,51

[14]John Raquel and David Ron felt. Networks and NetWare (RAND.,2001).50

[15] Frank M. Snyder. Command and Control: Readings and Commentary (President and Fellows of Harvard College., 1989., 35

[16] Montague Winfield. The Impact of Information Age Technology on Leadership, and Battlefield Command, Control, and Communication (U.S Army War College). 11

[17] Frank M. Snyder. Command and Control: Readings and Commentary (President and Fellows of Harvard College., 1989., 36

[18] Ibid., 60

[19] Ibid., 59

[20] Elliott Jaques and Stephen D. Clement. Executive Leadership (Cason Hall &Co. Publishers., 1991). 118

[21] MCDP 6. Command and Control (U.S. Marine Corps) 88.

[22] ibid., 117

[23] Ibid., 117

[23] Elliott Jaques and Stephen D. Clement. Executive Leadership (Cason Hall &Co. Publishers., 1991). 68

[24] Thomas H. Killion. Army Basic Research Strategy. (Washington DC: Office of Science and Technology Policy, 1995), 6.

[25] Ibid., 6

## BIBLIOGRAPHY


Arquilla John and David Ronfeldt. Networks and Netwars. RAND., 2001.

Bjorkland Raymond. The Dollar and Sense of Command and Control. National Defense University Press., 1995.

Command and Control Research Symposium. Science of Command and Control. AFCEA International Press., 1988.

Earle Mead Edward. Makers of Modern Strategy. Princeton University Press., 1948.

Fastrack: Shrinking surplus bad news for DoD. Army Times. 7 October 2002.

Gabriel A. Richard. The Culture of War. Greenwood Press., 1990.

Historical Evaluation and Research Organization. A Preliminary, Interpretive Survey of the History of Command and Control. Washington D. C. 1993.

Howard Michael and Peter Paret. Carl Von Clausewitz, on War. Princeton University Press., 1976.

Jacques Elliott and Stephen D. Clement. Executive Leadership. Cason Hall &Co. Publishers., 1991.

Killion Thomas H. Army Basic Research Strategy. Washington D.C. 1995.

Kubow Le'Ellen. Command and Control in the 21st Century. U.S. Army War College., 1995.

Loftis Donald. Command, Control and Communications. U.S. Army War College., 1991.

MCDP 6. Command and Control. U.S. Marine Corps., 1996.

Raquel John and David Ron felt. Networks and NetWare. RAND.,2001.

Snyder Frank M. Command and Control: Readings and Commentary. President and Fellows of Harvard College., 1989.

Thornton Reed. Command and Control. Princeton University., 1961.

Willcox A.M. Command, Control & Communications. Brassey's Defence Publishers.,1983.

Winfield Montague. The Impact of Information Age Technology on Leadership, and Battlefield Command, Control, and Communication. U.S Army War College., 1998.